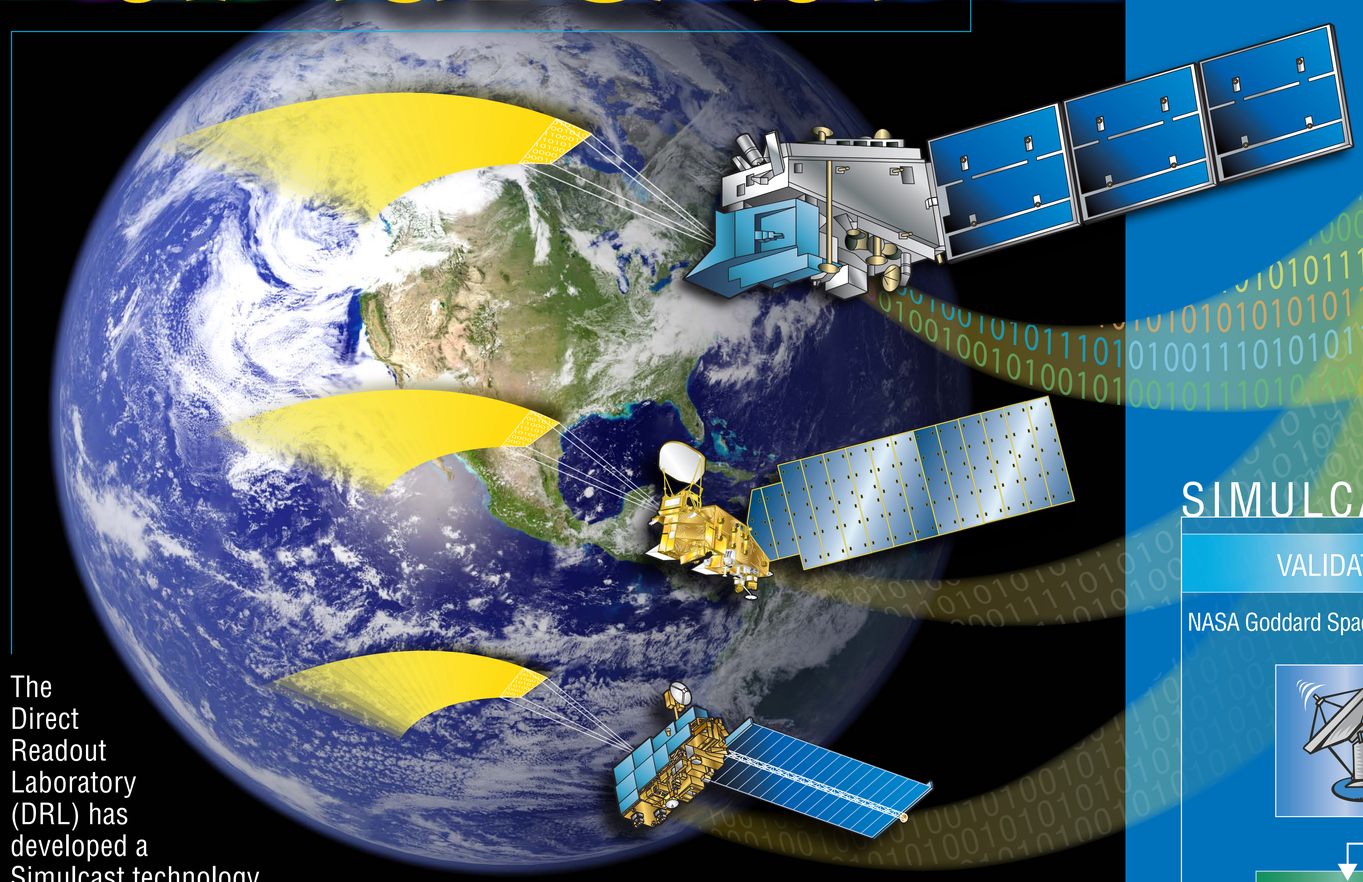
SIMULCAST

REAL•TIME QUICKLOOK

MULTI-MISSION • MULTI-SPACECRAFT • MULTI-INSTRUMENT



The Direct Readout Laboratory (DRL) has developed a Simulcast technology which–in real time and with a single Client–allows users to select and view quicklook instrument data from multiple missions and spacecraft. Simulcast is a standalone, Java-based technology that provides real-time geolocation and pseudo-calibration, and projects data on Mercator and Polar maps. Simulcast is scalable and capable of supporting many users, both local and remote. The Simulcast Client features an Auto Day/Night mode to allow passes near a pole to be viewed in TrueColor mode during the day portion, and Infrared mode during the night portion. The Client can also export displayed images to JPEG format. Simulcast can replay recent satellite passes. Since its inception, Simulcast has proved to be a valuable tool for real-time validation of instrument data by NASA. Servers and Clients can be located virtually anywhere in the world with a network connection, so Simulcast also has the potential for myriad tactical, environmental and educational applications.

NASA

NPP NPOESS PREPARATORY PROJECT

DIRECT READOUT

SIMULCAST ARCHITECTURE

ROUTER (ROUTER, ROUTER, ROUTER, ROUTER)

When a pass starts, the Router receives the CCSDS packet stream and transmits the packets to one or more Processors. The Router filters the packets according to instrument.

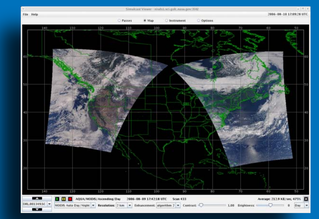
PROCESSOR (PROCESSOR, PROCESSOR, PROCESSOR, PROCESSOR)

The Processor receives the filtered packets from the Router and extracts instrument data. The Processor calibrates the data, corrects the bow tie effect, and reduces data volume. The Processor transmits viewable data to the Server.

SERVER

The Server receives viewable data from the Processor and notifies Clients that the new pass data is available. The Server simultaneously stores the data locally and transmits it to Clients and other Servers.

CLIENT



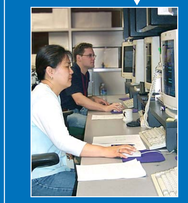
The Client receives the viewable data from the Server when a pass starts, or later via playback. The Client displays the pass data available from the Server (as scans or projected on Mercator or Polar Map Views, as selected by the user). The user can select desired bands/resolution, obtain a true-color composite, and perform a side-by-side band comparison.

SIMULCAST CLIENT APPLICATIONS

VALIDATION	ENVIRONMENTAL	TACTICAL	EDUCATIONAL/OUTREACH
NASA Goddard Space Flight Center	USDA Forest Service • Idaho	Aircraft Carrier • Gulf of Oman	University of Dundee • Scotland

Real-time Ingest → ROUTER → Packets → PROCESSOR → Viewable Data → SERVER

SERVER	SERVER	SERVER	SERVER
LAN, Internet	RIPCom, IP Over Satellite	IP Over Satellite, 3G/CDMA2000	Dial-Up, Internet



CLIENT: Aqua Controller

CLIENT: Terra Controller

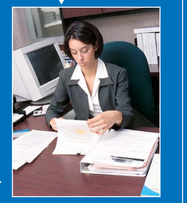
CLIENT: Firefighters in Oregon

CLIENT: Firefighters in California

CLIENT: Marines in Turkey

CLIENT: Army In Iraq

CLIENT: Student



CLIENT: Researcher